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MODELING OF ELECTROMECHANICAL SYSTEMS FOR RECOVERY ENERGY OF VEHICLE VIBRATIONS

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Abstract

In the article, the characteristics of the energy recovery system of mechanical vibrations of vehicles during their movement in difficult road conditions are investigated using mathematical modeling methods. The structure of such system is presented, which converts the energy of mechanical vibrations in the following sequence: the mechanical energy of the reciprocating motion—the mechanical energy of the rotational motion—the electrical energy of alternating current—the electrical energy of direct current. The system includes: a mechanical device for converting reciprocating oscillations of the vehicle chassis into a unidirectional impedance of the rotor of an electric generator, a three-phase alternator with permanent magnets, a rectifier and a battery. The system operation modes that ensure efficient battery charging processes are investigated. For a specific example of a system data of the charging time of a truck's batteries are presented. References 9, figures 7.

Key words: energy recuperation system, synchronous generator with permanent magnets, rechargeable battery.

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